

Abstract

Method and apparatus are disclosed for providing a constant voltage, high frequency sinusoidal output across a varying load, using either a single or multiple switch topology operating at constant frequency while maintaining high efficiency over the entire load range. This
5 embodiment is especially suited to applications which require the sinusoidal voltage be held very close to a desired value in the presence of rapid changes in the conductance of the load, even in the sub-microsecond time domain as is common in computer applications and the like and in powering electronics equipment, especially a distributed system and especially a system wherein low voltage at high current is required. Embodiments and sub elements provide energy storage for low voltage,
10 high current electronic loads, an ability to supply current with rapid time variation, connection of the energy storage element to the electronic load through specially configured conductors designed to minimize the created magnetic field around said conductors, providing extremely low inductance connections, permitting larger energy storage elements to be utilized, permitting energy storage to be located relatively remotely from the powered electronic load, and a steady voltage
15 from a transformer isolated, high frequency ac to dc converter under varying load without the necessity for feedback control, among other aspects. The addition of capacitors which interact with the leakage inductance of the transformer to produce a natural regulation condition is used and the relationship between the value of the leakage inductance of the transformer and that of the added capacitances is different from the condition of resonance at the operating frequency.